

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
13 January 2005 (13.01.2005)

PCT

(10) International Publication Number
WO 2005/003081 A2

(51) International Patent Classification⁷: C07C 303/00
(21) International Application Number:
PCT/US2004/020705

(22) International Filing Date: 25 June 2004 (25.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/482,925 27 June 2003 (27.06.2003) US

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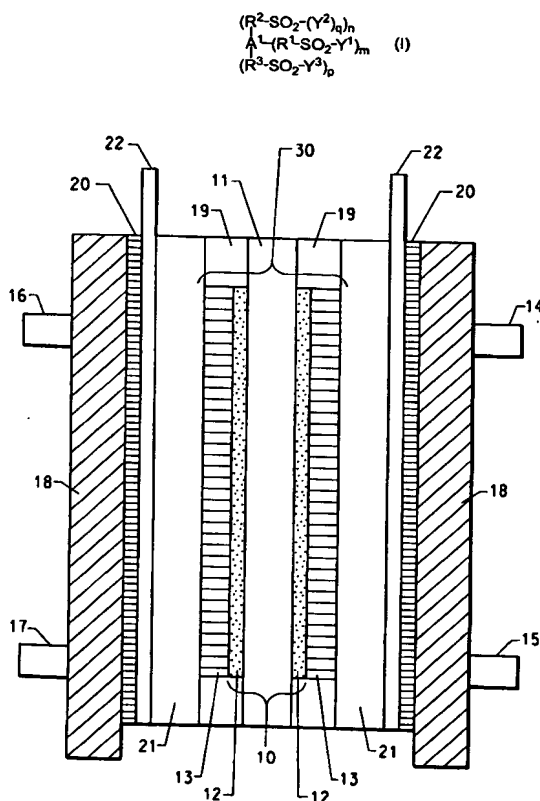
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

[Continued on next page]

(54) Title: SULFONIMIDE CONTAINING COMPOUNDS AND THEIR USE IN POLYMER ELECTROLYTE MEMBRANES FOR ELECTROCHEMICAL CELLS



(57) Abstract: A compound having the general structure (I), wherein A_1 is a monovalent, divalent, or trivalent aromatic heterocyclic group comprising heterocyclic rings; R_1 , R_2 , and R_3 are divalent fluorinated groups; m , n , and p are 0 to 3, with the proviso that $m + n + p$ is equal to 1, 2, or 3 so that the carbon atoms of the heterocyclic rings are fully substituted by acidic fluorinated sulfonyl-containing groups; q is 0 or 1; Y_1 is $-OH$, $-NH-SO_2-R_4$ wherein R_4 is a monovalent fluorinated group, $-NH-$, $-NH-SO_2-R_5-SO_2-R_6-NH-$, or $-NH-SO_2-R_6-A_2-R_7-SO_2-R_8-NH-$, wherein A_2 is a divalent heterocyclic group and R_5 , R_6 , and R_7 are divalent fluorinated groups; and Y_2 and Y_3 are $-OH$ or $-NH-SO_2-R_4$; with the proviso that when m and n are each equal to 1, p is 0 to 1, and q is 0, Y_1 is selected from the group consisting of $-NH-$, $-NH-SO_2-R_5-SO_2-R_6-NH-$, and $-NH-SO_2-R_6-A_2-R_7-SO_2-R_8-NH-$. By compound is meant either a small molecule or a repeat unit of a polymer. The invention also provides a solid polymer electrolyte membrane, a membrane electrode assembly, a gas diffusion electrode, an electrocatalyst coating composition, and a fuel cell.



FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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